

Gov. Doc
Can
Ag

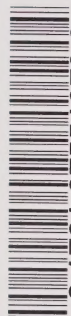
Canada, Agriculture, Department
of Experimental Farms

EXPERIMENTAL FARM HIGHLIGHTS

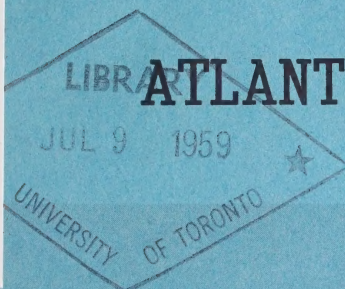
IN THE

ATLANTIC PROVINCES

1958



3 1761 07551979 3



Fertilized dikeland produces excellent pasture

EXPERIMENTAL FARMS SERVICE

CANADA DEPARTMENT OF AGRICULTURE



FOREWORD

This bulletin is one of an annual series presenting a brief summary of results of current investigations at the five Canada Experimental Farms in the Atlantic Provinces. These farms are located at Charlottetown, P.E.I., Fredericton, N.B., Kentville, N.S., Nappan, N.S., and St. John's West, Nfld.

The annual highlights supplement the regular 5-year Progress Reports that are issued separately by each of the Farms, and are designed to provide interesting up-to-date information about the research at each unit. It is possible to include only brief statements about projects; the reader with specific problems is invited to write to the Superintendent of the unit concerned for more detailed information.

Experimental Farms Service
Canada Department of Agriculture
Atlantic Provinces

Professional Personnel

Superintendents

Charlottetown, P.E.I.
Fredericton, N.B.
Kentville, N.S.

Nappan, N.S.
St. John's West, Nfld.

R.C. Parent, M.S.A.
S.A. Hilton, M.Sc. (Agr.)
C.J. Bishop, Ph.D.
T.H. Anstey, Ph.D. (Exchange
Supt.)
S.B. Williams, M.Sc.
H.W.R. Chancey, M.S.A.

Animal Husbandry

Charlottetown, P.E.I.
Fredericton, N.B.
Nappan, N.S.

J.W.G. Nicholson, M.Sc.
R.J. Curtis, M.Sc.
C.D.T. Cameron, M.Sc.
L.S. Hamilton, B.Sc. (Agr.)

Cereal Crops

Charlottetown, P.E.I.
Fredericton, N.B.
Nappan, N.S.

J.D.E. Sterling, M.Sc.
R.B. MacLaren
T.C. Chiasson, M.Sc.
F.S. Warren, Ph.D.
H.A. Riordon, B.S.A.

Field Husbandry

Charlottetown, P.E.I.
Fredericton, N.B.

Kentville, N.S.
Nappan, N.S.

St. John's West, Nfld.

C.B. Whiteside, B.S.A.
K.E. LeLacheur, B.Sc. (Agr.)
A.A. MacLean, M.Sc.
J.J. Doyle, Ph.D.
C.F. Everett, M.Sc.
J.S. Leefe, B.S.A.
E.T. Goring, B.S.A.
L.P. Jackson, M.S.
L.B. MacLeod, M.Sc.
A.F. Rayment, M.Sc.

Forage Crops

Charlottetown, P.E.I.
Fredericton, N.B.
Nappan, N.S.

K.F. LeLacheur, B.Sc. (Agr.)
T.C. Chiasson, M.Sc.
F.S. Warren, Ph.D.
J.E. Langille, B.Sc. (Agr.)

Horticulture

Charlottetown, P.E.I.
Fredericton, N.B.

Kentville, N.S.

G.C. Warren, B.S.A.
L.C. Young, M.Sc.
R.G. White, B.S.A.
H.T. Davies, B.S.A.
W.B. Collins, M.Sc.
D.A. Young, Ph.D.
L.E. Aalders, Ph.D.
E.W. Chipman, B.Sc. (Agr.)
D.L. Craig, M.Sc.
E.L. Eaton, M.S.A.
C.A. Eaves, M.Sc.
G.W. Hope, M.A.
R.P. Longley, M.S.A.
D.C. MacKay, Ph.D.
G.S. Swain, B.S.A.

Illustration Stations

Charlottetown, P.E.I.
Fredericton, N.B.

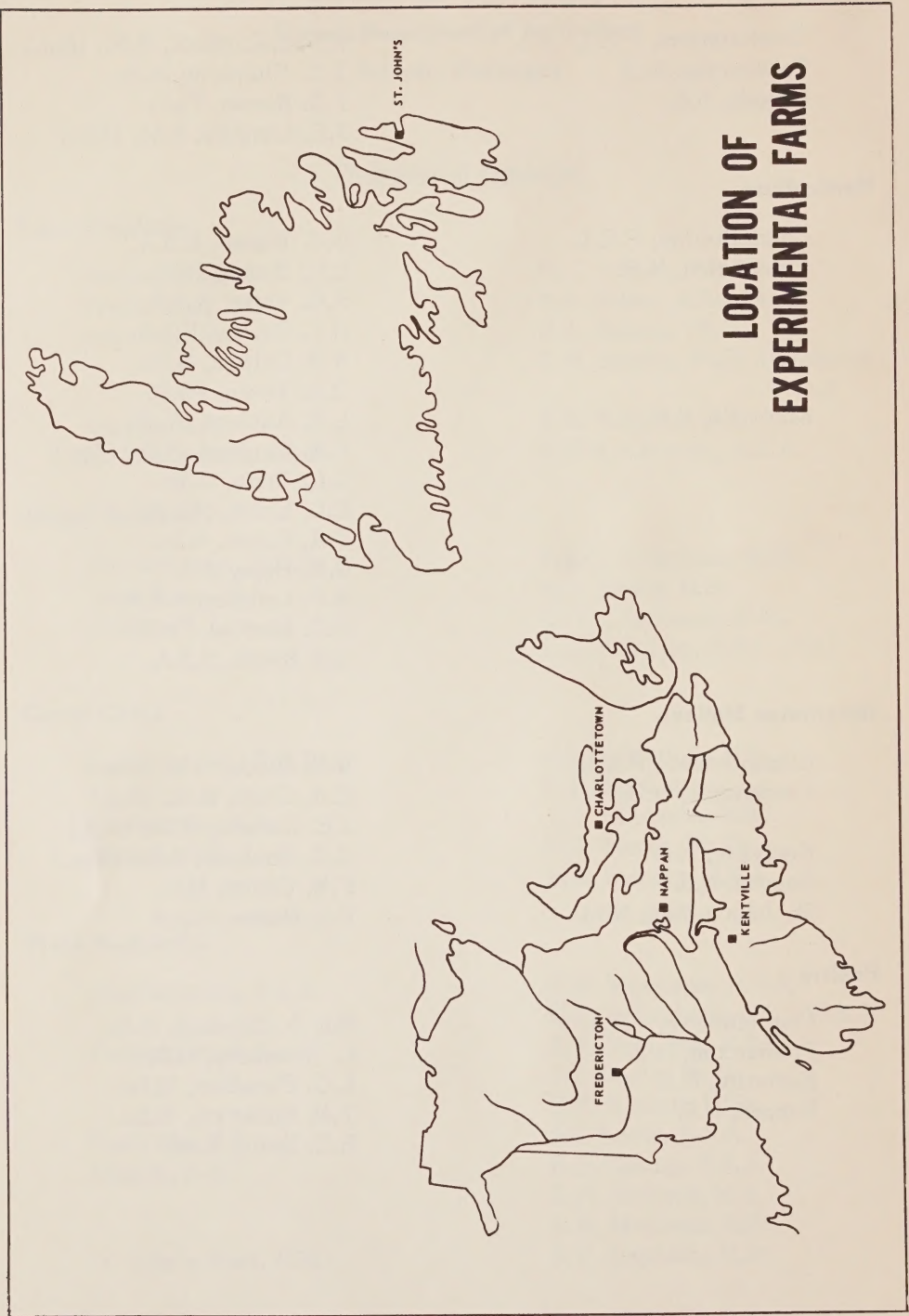
Kentville, N.S.
Nappan, N.S.
St. John's West, Nfld.

W.N. Black, B.Sc. (Agr.)
E.A. Grant, B.Sc. (Agr.)
J.E. Comeau, B.Sc. (Agr.)
G.G. Smeltzer, B.Sc. (Agr.)
F.W. Calder, M.S.
O.S. Mabee, B.S.A.

Poultry

Charlottetown, P.E.I.
Fredericton, N.B.
Kentville, N.S.
Nappan, N.S.

Roy D. Crawford, M.Sc.
L. Griesbach, M.Sc.
L.G. Proudfoot, M.Sc.
T.M. MacIntyre, M.Sc.
R.E. Smith, M.Sc.



ORGANIZATION

The Experimental Farms Service units co-operating in this publication, with brief notes on their organization and responsibilities, are as follows:

Nova Scotia

The Experimental Farm, Nappan, located in the northwestern part of the province, specializes in livestock breeding and nutrition; poultry nutrition; breeding and culture of field and forage crops; and dikeland utilization.

The Experimental Farm, Kentville, located in the Annapolis Valley, specializes in all phases of horticultural crop breeding, production, and utilization, and conducts research in poultry genetics.

Illustration Stations, numbering 14, are under the supervision of the Kentville and Nappan units.

New stations at Clarence, Annapolis County, on general agriculture, and at Barss' Corner, Lunenburg County, for highbush blueberry work, were established during the year.

Newfoundland

The Experimental Farm, St. John's West, is located in the most eastern section of the province. Research work is general but with emphasis on fertility problems related to vegetable and forage production. Other studies include poultry nutrition and management, introductory orchard work, and investigations of potato wart disease, clubroot, and insect controls.

Three Illustration Stations, a Blueberry Substation, and a Peat Substation, are supervised by this unit.

New Brunswick

The Experimental Farm, Fredericton, is located in the west-central portion of the province in the St. John River Valley. Although the research program is a general one covering all phases of New Brunswick agriculture, the Farm also specializes in potato breeding, and broiler breeding and management.

Three Substations are administered from the Fredericton office:

McDonald's Corner — A horticultural unit specializing in small fruit and vegetable breeding and production.

Tower Hill — Specializing in problems relating to the production of the native blueberry.

Alma — The isolation station for the potato breeding project.

Thirteen Illustration Stations are in operation in New Brunswick.

Prince Edward Island

The Experimental Farm, Charlottetown, deals with all problems relating to mixed farming in Prince Edward Island. Special attention is given to the breeding of cereal crops for the Atlantic Provinces, to soil fertility investigations, and to the breeding and nutrition of dairy cattle.

Eight Illustration Stations, including two in the Magdalen Islands, are under

the supervision of the Charlottetown unit.

Soil Survey

In all provinces the Experimental Farms Service (in co-operation with the Provincial Departments) is conducting Soil Surveys and the information so obtained is used by the soil fertility research officers in their study of plant nutrition problems.

Contents

Organization	5
Apiculture	8
Cattle	8
Swine	10
Sheep	10
Poultry	10
Cereals	14
Field Husbandry	14
Forage Crops.	19
Fruits	20
Vegetables.	21
Potatoes.	24
Subject Index.	28

APCIULTURE

American foul brood can be controlled

The feeding of $\frac{1}{4}$ teaspoon of sulfathiazol in one gallon of syrup per hive as soon as possible in the spring, followed by a light dusting of terramycin, T.M. 25, just prior to the honey flow, gave complete control of an infestation of American foul brood in the overwintered colonies in the Charlottetown apiary. Experience has shown that treatment must be repeated annually.

Package colonies increase in weight

Forty-five 2-pound packages of bees were weighed on arrival May 4, 1958, and the net weight of bees was found to be 99 pounds. The net weight 37 days later had risen to 147 pounds, an increase of 48 per cent. This indicated the build-up that can be expected before bees are normally required for pollination.

CATTLE

Holstein calves vary in feed efficiency

Holstein heifer calves at Fredericton were individually fed to determine their ability to convert feed nutrients into gains of body weight.

Calves were started on individual feeding at 6 months of age. They were fed good quality hay free choice and up to 4 pounds daily of an 18 per cent protein commercial calf starter. The heifers were weighed at the start and again at the end of the 2-month feeding period.

For six calves the number of pounds of total digestible nutrients needed to produce 1 pound of gain varied from 3.2 to 5.0, indicating considerable differences among Holstein heifers in ability to use feed efficiently during growth.

Raw potatoes can replace silage in the milking cow ration

During the winters of 1956-57 and 1957-58, 16 milking Holstein cows at Fredericton were used to determine the effect of replacing grass silage with potatoes, with and without the addition of extra protein supplement.

The highest production of milk, butterfat and milk solids-not-fat was obtained when potatoes replaced all of the silage portion of the ration on an equal dry matter basis. The addition of extra protein did not appreciably increase production. Body weights were not significantly affected.

Fresh daily grazing for milking cows pays off

Restricting the grazing of the dairy herd by the use of electric fencing to an area that is completely grazed off each day has paid handsomely at Nappan during the past 4 years. Fertilizer treatments of 300 pounds of 0-20-20 have been applied each spring and 100 pounds of ammonium nitrate at the end of June.

This pasture, of just under 12 acres, has carried an average of 24 milking Jersey cows each season, with production averaging 7,000 pounds of milk per acre. Valuing the milk at market prices and deducting the cost of fertilizer, the cost of moving the fences daily, and the cost of the supplemental meal fed, the

return per acre has been over \$280 per season.

Consumption of grain reduced by added fat

Grain was consumed at the rate of 12 pounds per animal daily from August 1 to October 23 when self-fed to 2-year-old beef steers finished on pasture at Nappan. Because of this heavy grain consumption the returns after deducting the cost of the grain consumed were less than the returns from steers finished on pasture alone.

In an effort to restrict intake, tallow was added to the grain at the rate of 10 per cent in a subsequent trial. The grain consumption and gains of the steers that received grain with added fat were 52 and 8 per cent less, respectively, than for steers on grain without added fat. Comparable steers on pasture alone made less rapid but more economical gains than did those that received supplementary feed on pasture. All animals in the grain and the grain plus tallow lots were marketed 39 days earlier than those that received no supplemental feed. Although the cattle in the lot receiving the grain without tallow had somewhat better carcass grades than did those in other lots, differences were not great. The economics of feeding supplemental grain or grain plus tallow to steers on pasture will depend not only on the extra gains obtained but also on relative market prices at different times during the summer when the cattle are ready for sale.

Steer carcass grades on grass

Carcasses from 98 two-year-old beef steers finished on pasture without grain at Nappan during the 5-year period 1954-58 were graded 3, 33, 55 and 9 per cent A, B, C₁ and C₂, respectively.

During 1957 and 1958, 38 two-year-old beef steers were self-fed grain on pasture and 27 comparable steers were finished on pasture without grain. Twenty eight or approximately 74 per cent of the carcasses from the steers on grain and 16 or approximately 62 per cent of the carcasses from the steers on pasture without grain were graded in the two top grades. The remaining carcasses in each lot were graded standard. With well bred 2-year-old cattle, good carcass grades can be obtained without grain if excellent pasture or aftermath is available.

Hay pellets increased rate of gain

In an experiment at Nappan 10 yearling beef steers on a ration of pelleted mixed hay and 3 pounds of meal per animal per day made an average daily gain of 1.2 pounds per steer for 126 days. Comparable steers that received the same amount and quality of unpelleted hay along with the same grain ration during this period made an average daily gain of 1.0 pounds per steer.

Wide variation in rate and economy of gain in beef cattle

Records taken at Nappan on the performance of 124 Shorthorn bulls, steers and heifers by six sires were recorded from 1952 to 1957. Each of two bulls was bred to half of the cows each year. The cows were alternated between two pastures during the breeding season; for the rest of the year they were together on the same pasture and housed and fed alike during the entire winter. The progeny were also fed and managed in the same way. They were fed individually, during the test

period from weaning to a live weight of 800 pounds for males and 700 pounds for females.

Difference of 30, 21 and 20 per cent in the cost of feed for gains in live weight were found between the most efficient and the least efficient heifers, bulls and steers respectively.

SWINE

Fish waste – a satisfactory protein supplement for hogs

Fish viscera flour prepared from fresh cod and haddock viscera was a satisfactory protein supplement with grain in grower and finisher rations for pigs at Nappan. The viscera were collected on board ship and prepared by the Fisheries Technological Station, Halifax, N.S. After the addition of sodium nitrate, a preservative, the viscera were kept at a temperature of 80 ° to 100 ° F. for several days during which time most of the solids went into solution. The solution was drum dried and the dried material was ground to give the final product.

The fish flour was readily accepted by the pigs and their performance as measured by rate of gain, feed efficiency and carcass grade, was satisfactory. Taste tests showed that the flavour of the pork produced was satisfactory.

An estimated 90 million pounds of fish viscera are discarded each year in the Atlantic area. From this amount of viscera approximately 18 million pounds of fish flour could be produced annually.

SHEEP

Grass silage satisfactory for sheep

The Shropshire breeding flock at Nappan was divided into two lots at the conclusion of the breeding season each year from 1952 to 1954. One lot received grass silage as the only roughage plus a small grain allowance until the start of the pasture season. The other lot received hay and the same grain allowance as the lot on grass silage. There was little difference between the two lots in the performance of the ewes and lambs.

In a subsequent trial ewes fed high dry-matter grass silage (27 per cent dry-matter) consumed 22 per cent more dry-matter than comparable ewes on low dry-matter silage (20 per cent dry-matter). Although the ewes on the low dry-matter silage lost a little more weight, the performance of the ewes and lambs was satisfactory on both low or high dry-matter silage.

POULTRY

Rye can be used as a feed for broilers

It has been established at Nappan that a moderate amount of rye may be fed to growing chickens. However, a noticeable decline in growth rate is observed as the level of rye is increased above 15 per cent.

Efforts to improve the feeding value of rye have met with some measure of success. Water soaking, (at room temperature and at higher temperatures), for 24 hours significantly improved the feeding value of ground rye, although results were

still not comparable with those obtained with other common grains. Enzyme supplements in general had little effect. Additional energy, in the form of stabilized animal tallow, had a detrimental effect upon growth of chickens on diet containing rye. The growth depressant contained in rye is neither water soluble nor soluble in ordinary organic solvents such as alcohol and ether.

While not directly overcoming the growth depressant, investigations at this Farm have shown that larger amounts of rye may be fed if the ration is pelleted. Pelleted rations containing 30 per cent rye have produced broilers superior to those on an all-mash standard ration, but at a cost of a somewhat lower feed efficiency. Thus rye may be used economically where this cereal is competitive with other grains. For best results the ration must be pelleted and under these conditions a maximum of 30 per cent rye may be fed to broilers.

Selection program improves broilers

A method of selecting the parent stock to be used in a cross-breeding program, known as reciprocal recurrent selection, has been effective in increasing 10-week body weights of chicken broilers at Fredericton. In the first year of the experiment, the crossbreds averaged 3.7 per cent above the mid-values of their purebred parents. In the 1st, 2nd, and 3rd generations of selection, the average body weights of the crossbreds rose 5.7, 9.7, and 7.2 per cent, respectively, above the mid-values for the parents. In the same period, this method of selection which is based on crossbred weights, automatically increased the weight of the purebreds by an average of 3.7 per cent.

Restricted feeding can be profitable

Results of 2 years' experiments at Charlottetown indicate that income can be increased by as much as 36 cents per bird by restricting the feed intake of growing pullets. Half of the pullets on range were full-fed, and the others received only 70 per cent of the feed intake of their sisters. In the laying house both groups were full-fed.

Income from eggs and market fowl was calculated from local market prices. Feed costs were based on figures comparable to those charged locally. In the first trial, egg income less feed cost was found to be 36 cents per bird greater for the restricted group; in the second trial, the increased profit from restricted feeding was 30 cents per bird.

When placed in the laying house, restricted birds weighed less than those full-fed, but there was no difference in body weights by mid-March. Restricted birds were slower coming into production but egg production to 500 days of age was equal to that of the full-fed group.

Oiling effective in maintaining egg quality during marketing

A total of 3600 eggs were used at Kentville to test the effect of oiling, using an aerosol dispenser, on the decline of quality at a temperature of 70 ° F. Un-oiled eggs were used as controls. Albumen height was used as a measurement of egg quality after eggs were in storage for periods of 4, 8, 12 and 16 days at a storage temperature of 70 ° F. Results demonstrated that oiling effectively retarded the decline of egg quality. After oiled eggs had been in 70 ° F. storage for 16 days an

average A Grade quality was maintained. Under the same conditions unoled eggs had deteriorated in quality to C Grade.

Soluble or insoluble grit for poultry?

Investigations at Nappan have determined the grinding capacity of the so-called "dual-purpose" soluble grits. Results of these trials have shown that soluble limestone grit is as effective as insoluble quartz grit as a grinding agent. Soluble grits, however, were not retained in the gizzard nearly as long as the insoluble, consequently a greater intake of the soluble grits can be expected.

Pelleting improves broiler rations

Experiments at Nappan involving over 4000 broilers have shown that feed efficiency can be significantly improved by pelleting. This increased feed efficiency was maintained even when the pellets were reground to mash consistency indicating that the simple mechanics of pelleting have a beneficial effect.

Normally in broiler feeding, crumbles are fed to 5 weeks followed by pellets. Comparing the response of broilers on such a program with those receiving the same feed as an all-mash ration, it was found that a 5 per cent increase in body gain and a 3 per cent increase in feed efficiency could be expected using the crumble — pellet feeding method.

Save feed with caplin

Laying trials at St. John's, Newfoundland, reveal that a saving in feed costs costs can be made by feeding salted, dried caplin to laying hens. A diet of whole grains and ground caplin proved inadequate for both Single Comb White Leghorn and Barred Plymouth Rock hens, but it was found that when ground caplin was fed, the amount of laying mash could be limited to about one half of that normally consumed. Where dried caplin is readily available at little cost a real saving in feed can be made by limiting the amount of laying mash, and feeding ground caplin with whole grains to laying hens. Laying mash should be fed at the rate of about 6 pounds per 100 birds per day and the ground caplin self-fed in hoppers. The scratch grain portion of the ration may be fed in hoppers or by hand once or twice daily.

Persistency not affected by method of rearing

The effect of confinement versus range rearing of pullets on their persistency of production over a 92-week period was tested at St. John's. During the rearing period both groups were fed a complete confinement growing mash and grain mixture. The confinement reared birds went into molt more rapidly but also recovered from the molt more rapidly than did the range reared birds. The method of rearing had no effect on the persistency of production. After a full year in the laying pens the rate of production was 61 and 62 per cent for the range and confinement reared birds respectively and production followed a similar pattern for both groups during the second year in the laying pens.

Simple range ration saves dollars

Single Comb White Leghorn pullets on range at St. John's were fed a ration

made up of whole grains (equal parts of wheat, oats, and barley) and fish meal, and were compared with a similar group fed a commercial growing mash and whole grains. All feeds were self-fed to the chicks. The birds fed the fish meal and whole grains consumed about 3 pounds less feed per bird than did those fed the growing mash and grain. Based on feed prices at St. John's this represents a saving of about 20 cents per bird in feed cost for a period of 106 days on range. The birds fed the fish meal weighed 3.33 pounds and the full fed birds 3.48 pounds at housing. There was no difference in mortality between the treatments. This method of rearing has obvious advantages and offers possibilities for a real saving in feed.

Herring oil, a source of energy for poultry

Experiments have been conducted at Nappan in an endeavour to find a use for low vitamin fish oils. In these studies herring oil has been tested as a source of energy for growing chickens. Crude herring oil and various fractions of herring oil prepared in the Laboratory of the Fisheries Research Board of Canada at Halifax have been tested. These oils were fed at a level of 2.5 per cent of the ration and compared with animal tallow as a source of energy. In all cases the herring oil proved equal to animal tallow. Results indicate that herring oil may be used as a source of energy for growing chickens.

Crude protein a good measure of effective protein

Rations containing adequate and lesser amounts of the amino acid methionine were fed to laying hens at Nappan. When birds were fed rations containing 13 and 15 per cent crude protein, low methionine intake did not have any apparent effect on egg production. The addition of synthetic methionine to the 13 per cent ration presumably deficient in this amino acid had an adverse effect on egg production. These results indicate that crude protein is an adequate measure of protein quality for laying hens. On the basis of present knowledge the addition of synthetic amino acids to laying rations is not justified.

Characteristic deficiency symptoms appear slowly

Work on the vitamin A requirements of hens reared on range and housed in laying cages was conducted at Nappan. It was found that when small amounts of vitamin A were fed in the laying rations symptoms characteristic of a vitamin deficiency did not appear until egg production had practically ceased. Feed consumption was not affected by the amount of vitamin; small amounts in the ration caused a drop in egg production but had no effect on body weight. Since a marginal amount of this vitamin may cause low egg production without any other symptoms being evident, it is recommended that the vitamin A content of laying rations be not less than 2000 I.U. per pound of feed.

Liver meal can be fed in large amounts

Continuing studies at Nappan on the value of fish liver meal as a source of protein have shown that up to 14 per cent can be fed in a ration containing 2.5 per cent fish meal or in an all-vegetable ration. For young growing chickens the value of liver meal as a source of protein appears to fall between that of soybean oil meal and fish meal. The value of fish liver meal as a good source of vitamin B₁₂ has been confirmed.

CEREALS

Barley line shows promise

A barley developed through the Maritime Cereal Breeding Project has displayed good yield in recent tests and preliminary testing at Charlottetown indicates that the line also possesses high resistance to loose smut, barley jointworm and barley root rot. It is among the best of the six-row types in threshing quality and it is moderately resistant to lodging. The line was derived from the cross N-C13-13 (Anoidium x Fort 2).

Septoria disease encouraged by stubble seeding

Studies at Charlottetown in 1958 gave strong evidence that *Septoria avenae* disease of oats is more severe when the crop is seeded on oat stubble than when seeded on fallow land. Greenhouse studies in 1957-58 indicated that the primary source of inoculum of the disease is ascospores produced on the stubble.

Oats most reliable grain crop

Some indication of the probabilities involved in producing satisfactory cereal crops is provided by previous years production. In each of the past 20 years, some 20 varieties or strains of each of oats and barley and 12 of spring wheat have been grown in replicated plots at Nappan. During this period, the range in mean yields was 49.8 to 116.8 bushels per acre for oats, 38.5 to 85.2 bushels for barley and 15.2 to 54.2 bushels for spring wheat. Yields amounting to at least 60 per cent of those obtained in the year with the best yields were produced in 14 of the 20 years by each crop. However, bumper yields, more than 85 per cent as good as the best crop year, were produced in 4 years by oats, 2 years by barley and only 1 year by wheat. On the other hand, yields lower than 40 per cent of the best yield occurred only with wheat and were recorded in 3 years with this crop.

FIELD HUSBANDRY

Superphosphate increases marshland hay yield

Native hay on marshlands along the Codroy River, Newfoundland, responded favorably to moderate dressings of superphosphate. At the Doyles Illustration Station, annual applications of 600 pounds of 20 per cent superphosphate per acre increased hay yields by 40 per cent in the first year, 17 per cent in the second, and 170 per cent in the third. The quality of the treated sward steadily improved as wild white clover replaced coarse marsh grasses.

Peat boosts turnip yields on mineral soils

Peat, together with enough lime to neutralize excess acidity, may be used to increase crop yields on mineral soils low in organic matter. At the Lethbridge Illustration Station on the east coast of Newfoundland, 10 tons of peat per acre applied before seeding turnips increased yields by 3500 pounds and 20 tons gave increases of up to 5600 pounds. Where peat is readily available, these increases should more than repay necessary labor and lime costs.

Banding of fertilizer superior to broadcasting for oats

Drilling fertilizer with the seed gave greater yields of both oat hay and grain than broadcasting on Newfoundland Illustration Stations. At Doyles, on the west coast, oats yielded 12.8 bushels more per acre where fertilizer was placed in the row with the seed. At Lethbridge, on the east coast, oat hay yield was increased by almost a ton per acre under similar treatment.

Pastures should be fertilized regularly and frequently

In an experiment at Nappan, a permanent pasture was fertilized by applying 1500 pounds of minerals at one time, compared with dividing this into three equal parts and applying 500 pounds each year for 3 years. Nitrogen applications were made annually to both pastures.

In the first and second year little difference was obtained in the yields despite the larger quantity of fertilizer applied in the "all-at-once" application. In the third year, however, the annual treatment produced herbage yields 50 per cent larger than those obtained with the large triennial application.

Silage corn grows well on dikeland

At Nappan, corn has been grown for many years for silage but in 1958 it was grown for the first time on the dikeland. In spite of the cool wet summer the crop thrived and developed satisfactorily, producing a yield of over 18 tons per acre. This compared very favourably with yields on the best upland fields. The variety used was *Warwick 210*.

Nitrogen for pastures

At Nappan, nitrogen in the form of urea 45 per cent, ammonium nitrate 33 per cent, and sulphate of ammonia 20 per cent, was applied to permanent pasture. The quantities of fertilizer used supplied equal amounts of nitrogen; results have not shown any differences that favor one form. The relative cost of nitrogen per pound would therefore be the most important consideration when purchasing nitrogen for permanent pasture.

Superphosphate gives quick returns on dikeland pasture

Pasture production in 1958 was greatly increased over the average of previous years following one application of 600 pounds superphosphate to a dikeland pasture at Nappan. The average 1953 to 1957 was 2600 pounds dry matter per acre; for 1958 production rose to 4780 pounds dry matter per acre. This increase of 84 per cent was obtained in a season when production from regularly fertilized pasture, because of a favorable season, was greater by 23 per cent than the 5-year average.

Corn spurrey is checked by MCP

The chemicals MCP, 2,4-D, and MCP(B) have been used at Nappan as herbicides for the control of corn spurrey in a field of oats. Treatments were applied when the spurrey was at the 3-to 5-leaf stage of growth. The MCP at 8 ounces per acre gave fairly effective control but did not eliminate the weed. There was no effect noted from the 2,4-D and MCP(B) treatments.

None of these chemicals was harmful to oats at the rates used in the test.

Pasture can be renovated without ploughing

Dalapon at 10 pounds per acre completely killed red fescue and other native grasses in a pasture renovation trial at Nappan. Amino triazole at the same rate was also very effective but did not give a complete kill in all places. There was no apparent damage to white clover from either chemical.

Twenty pounds per acre of a timothy, red clover, alfalfa, ladino, orchard grass mixture was seeded on the undisturbed dead turf. These species have grown well on some areas but volunteer native grasses are providing competition in other places.

This procedure can be of value in the removal of undesirable species from steep pastures that should not be ploughed.

Cattail control in drainage ditches

Amino triazole and dalapon at 1 pound in 10 gallons of water killed a heavy growth of cattail in dikeland drainage ditches at Nappan.

Mid-summer spraying on mature cattail plants killed all growth with one treatment but left a residue of dead material in the ditch. Plants sprayed in late spring required a second treatment in mid-summer to control a small amount of re-growth. The double treatment required extra work but gave a much cleaner ditch because of the smaller quantity of dead leaf residue left to clog the ditch.

Weeds decrease as pH of soil increases

Trials conducted by the Nappan Experimental Farm have shown that with a soil pH of 4.8 the ground covered by weeds on pasture land was 42 per cent of the total. When the pH was raised to 5.6 by application of 2½ tons of limestone per acre the ground covered by weeds was reduced to 12 per cent. Equal quantities of commercial fertilizer were applied in both cases.

Time of nitrogen application important in pasture renovation

Trials conducted on renovation pasture land on the Knoydart Illustration Station in Nova Scotia indicate that the time of applying fertilizer as well as the kind of fertilizer is important. When nitrogen was applied in the spring along with adequate phosphorus and potash, high yields were obtained early in the season. When the same amounts of nitrogen and mineral fertilizers were applied later in the season the total yield was a little less but it was spread more evenly over the grazing period. The later applications also produced a sward with a higher percentage of clover.

Fertilizer now used for more crops

Since the establishment of a soil laboratory at Charlottetown in 1944, a soil advisory service to farmers has been conducted in co-operation with the Provincial Department of Agriculture.

In the early years of this service 75 per cent or more of the inquiries were concerned with fertilizer requirements for the potato crop.

During the past 5 years or so summaries of the inquiries have shown a trend to a more diversified use of the fertilizer applied. The data for 1958 show the following distribution pattern; for potatoes, 31 per cent, grain 21 per cent, root

crops 5 per cent, hay 4 per cent, pasture 7 per cent, strawberries and other small fruits 4 per cent, canning crops 7 per cent, market and home garden crops 7 per cent and miscellaneous 14 per cent.

Phosphorus, an important element in field bean nutrition

In a 3-year study in New Brunswick of the nutritional requirements of field beans, phosphorus proved to be the most essential element and gave increased yields at rates of up to 200 pounds per acre of P_2O_5 . Nitrogen and potassium are required in lesser amounts, 50 pounds per acre of N and K_2O satisfying the requirements of the crop in this study. Of the commercial formulae presently available, 3-15-6 applied at 1000 pounds per acre would appear to meet the requirement of the crop quite closely. Care must be taken that the fertilizer does not contain boron. Beans are extremely sensitive to this element and, if it is applied, yields may be seriously reduced.

Lime penetrates soil slowly

Where lime was applied at rates of up to 6 tons per acre on the surface of Tormentine soil at Nappan the pH of the top inch of soil was raised 1.3, the second inch of soil 0.4 and the third inch only 0.2. This lime had been applied 18 months before the time of testing. At lower rates of application the penetration was proportionately less.

When lime was worked into the top 6 inches of soil penetration below the 6-inch depth was also very slight.

Rates of lime for pasture production

Six different rates of lime were applied to the surface of sparsely sodded Tormentine soil on the Special Project Fenwick Illustration Station. The previous year the entire area received a uniform amount of fertilizer and at the same time it was surface seeded.

An increase in herbage production was obtained by each successive increase in rate of limestone application up to 2 tons per acre but rates above 2 tons did not produce any further increase in yield.

When lime was worked into this soil production increased as rates of lime increased up to 6 tons per acre, which was the highest rate used.

Where the same rates of lime were applied to a soil with a dense sod, increases in first year production occurred up to the 1-ton rate but no further increase resulted from larger applications. This result was the same whether lime was applied on the surface or worked into the top 6 inches of soil.

Residual effect of commercial fertilizer limited

Studies were conducted on seven Illustration Stations in Prince Edward Island over an 11-year period to determine the most effective place in a regular farm rotation, (hoed crops, cereals, clover, timothy, timothy or pasture) to apply plant food.

An initial application of 12 tons of manure per acre was applied to root land.

Results indicate that 1500 pounds of 5-10-10 per acre, applied to hoed crops, are not sufficient to insure highest production of succeeding crops.

On the basis of total digestible nutrients, production of turnips and mangels was highest when all the fertilizer was applied to the root crops; for cereals, highest yields were obtained when 1200 pounds of fertilizer were applied to the root crop and 300 pounds to grain prior to seeding; for clover, most economical yields were secured when 1200 pounds of fertilizer were applied to roots and 300 pounds direct to the clover crop in early spring; for timothy hay, similar treatment as for grain plus 20 pounds of available nitrogen to succeeding hay crops proved most beneficial.

Amino triazole superior to varsol as a herbicide for cranberries

Varsol at 250 gallons and amino triazole at 8 lb. active per acre were compared in tests conducted at Charlottetown. All plots received 200 lb. of ammonium sulphate. The varsol was applied May 22 before the cranberry buds swelled and the amino triazole when weed growth was well advanced, but before cranberry bloom appeared.

Excellent grass control was obtained from both materials but amino triazole was a much superior general herbicide. Both materials appeared to suppress yields slightly when compared to clean plots receiving no herbicide treatment.

Sources of nitrogen are compared for grain production

Field plots tests were conducted on Prince Edward Island in co-operation with the Illustration Stations Division in 1958, on two soil types, O'Leary loam and Culloden loamy sand, to compare urea (45% N) with ammonium nitrate (33%N) and ammonium sulphate (20%N), as a source of nitrogen for grain.

No harmful effects on crop growth from the use of urea were observed even when it was applied (broadcast) at a rate sufficient to supply 40 pounds of nitrogen per acre.

Yields increased on both soils with each increment of nitrogen, irrespective of source, but the response varied on each soil for each source of nitrogen at the different rates of 10, 20 and 40 lb. of nitrogen per acre. However, on the average there was little difference between the different sources of nitrogen as measured by total yield or protein content of the grain.

Manure best used with commercial fertilizer

In a 4-year rotation of potatoes, oats, clover, and timothy hay, on the Illustration Station, New London, P.E.I., manure was applied to timothy stubble at 10 tons per acre, and supplemented with 1,500 pounds of a complete fertilizer for potato production. This treatment has resulted in a yield increase of 66.6 bushels of marketable tubers per acre over plots receiving fertilizer only. The beneficial residual effect of manure was reflected in the hay crops; average yields of clover increased by 0.38 tons and timothy 0.56 tons per acre. This trial has been run for the past 11 years.

Soil erosion losses

Results obtained during the past 4 years on the soil erosion plots at Charlottetown have not revealed any serious losses.

The soil losses that have occurred during the growing season reflect, in general, the effect of cropping practices, length of plot, and to some extent intensity of rainfall.

The loss of soil was greater on the plots under continuous row cropping compared with plots under a 3-year rotation. Losses were greater on plots cultivated with the slope rather than across the slope. The loss of soil from long plots compared with losses from short plots, with both types of plots under continuous cultivation, increased more proportionally than the differences in length of the plots.

The greatest loss of soil occurred during thaws in the early spring before the soil was completely thawed and was consequently impermeable.

Better use of labor provides higher farm income

Efficient use of available labor has had more effect on the earnings of Newfoundland Illustration Station operators than any other single factor. Farm management studies on five stations over a 6-year period show that income is more closely related to labor efficiency than to size of farm, use of capital, crop yields, or livestock production.

Well drained soil best for alfalfa

In a study conducted in New Brunswick over a 4-year period on a well drained soil at St. Isidore, and on an imperfectly drained soil at Mont Carmel, the following results were obtained: alfalfa after 4 years production is still vigorous on limed and fertilized plots at St. Isidore. Lime and fertilizer both gave significant yield increases at this station. On the imperfectly drained soil at Mont Carmel, alfalfa had to be reseeded after 2 years of production. A significant response from fertilizer was obtained; there was no response from lime.

FORAGE CROPS

Kale is suitable for late season forage

Green marrow stem kale was seeded at Charlottetown in a uniform field with eight strains of hybrid corn. Both crops were seeded June 13. The corn suffered slight frost injury on September 19; both crops were harvested on this date although the kale was still green and growing actively. A comparison of yields showed that kale produced 24.9 tons of green material and 2.6 tons of dry matter per acre. An average of the eight strains of corn under test resulted in 24.2 tons of green material per acre yielding 3.8 tons of dry matter. Kale produced more green material than the average for corn although it was lower in dry matter production. The ability of kale to withstand frost and grow until very late in the season, together with the fact that cattle make full use of the large stems, make it an excellent fall feed. Kale should prove more successful than corn in areas where early frost is a problem.

Flint – dent hybrids most dependable for grain corn

Three types of field corn have been grown for grain production at Nappan, namely, flint varieties, flint–dent hybrids, and dent hybrids. These corn types had a completely different yield response each year in three successive years

having dissimilar weather conditions. The 1955 season was short but reasonably warm. As a result only the quickly maturing flint and flint-dent types matured at well and they ranked highest in yield. The dent type hybrids, though much less mature, averaged about 10 bushels lower in yield. The following year early frosts destroyed all entries and no yields were obtained. The 1957 season was cool but extended late into the fall; all types became reasonably mature. The flint varieties yielded about the same as in 1955 while the flint-dent and dent hybrids averaged over 20 bushels more in yield. For grain production in marginal regions flint-dent hybrids such as *Warwick 150* would appear likely to make the best possible use of any growing season.

Seed production and quality of swedes under investigation

As a result of the swede breeding program at Nappan a number of strains with similar resistance to clubroot have been produced. These are now being subjected to further selection on the basis of seed production and cooking quality.

The seed production of six roots of each of 19 strains was compared in the greenhouse in 1957. Production was remarkably consistent for the individual roots of a strain, but ranged from an average of less than 100 seeds per plant for three strains to over 4000 seeds per plant for three other strains. Eight strains averaging over 1000 seeds per plant were retained for further study. Satisfactory seed production was found for each of these strains in 1958.

The first cooking test of the eight remaining strains was conducted in 1958. A taste panel of 10 to 15 persons rated the cooked swedes for a number of factors including flavor, color, moisture, texture and freedom from objectionable flavors. Six of the strains were determined to be reasonably satisfactory when compared to *Wilhelmsburger* and one was particularly objectionable. Considerable variation was noted between strains indicating a need for further study of this important characteristic.

FRUIT

Apple tree growth as related to amount of bloom

For 10 years, trees in the experimental orchards at Kentville have been scored with respect to bloom and trunk cross sections have been recorded. All varieties were used that are represented by more than seven trees of bearing age; the trees received no fruit thinning. From the records, it has been determined that those trees with no bloom and those having maximum full bloom grew less (6.4 per cent and 6.7 per cent increase respectively) than those trees with intermediate bloom (8.6 per cent increase). This general situation applied to the *McIntosh* and *Cortland* varieties. With *Northern Spy*, however, it was found that the trees with no bloom grew the fastest (11.0 per cent increase) and those with full bloom grew the slowest (6.3 per cent increase). For practical purposes it can be concluded that the rate of tree growth is not related to the amount of bloom.

Growth needed in young apple orchards

There is considerable interest in the rate of growth of young apple trees in

the Annapolis—Cornwallis Valley where there is an increased interest in orchard planting. It was determined in a young orchard of *Gravensteins* and *Melbas* set in 1954 at the Experimental Farm that in the second and later years of growth the rate of increase of *Gravensteins* on *Malling II* rootstocks was 176, 90, 65, and 71 per cent for the four years respectively. The corresponding increase for *Melba* on *Malling I* rootstocks was 177, 84, 67 and 48 per cent respectively. This is considered satisfactory but greater growth would be advantageous.

In the same orchard, a study was made of the effect of soil acidity on tree growth. The range in soil pH was 5.4 to 6.5. Within this range no effect was found in tree growth which could be related to soil acidity.

Removal of carbon dioxide from C.A. apple storages

With certain varieties of apples it is necessary to keep the carbon dioxide content low in C.A. storage to prevent injury to the fruit. A dry scrubber has been developed at the Experimental Farm, Kentville, which essentially depends upon the absorbing action of fresh hydrated lime.

In contrast to the conventional method, that is absorption by means of a solution of sodium hydroxide which must be replenished daily, the dry scrubber requires little attention apart from the routine gas analysis. The gas concentrations are regulated more easily and a higher relative humidity can be maintained in the storage.

The equipment costs half as much as the conventional scrubber, and the lime one-quarter that of soda flake. There is no depreciation resulting from corrosion of the equipment, and the lime may be applied to the land after use.

VEGETABLES

Plastic covered greenhouse proves satisfactory

Two years of study at Fredericton has indicated that a plastic covered greenhouse is a satisfactory structure wherein to grow plants. Seedling potatoes and tomatoes have all done well as have spring grown annual flowers and vegetables. The plants are sturdy and of good color. Propane gas has provided an efficient automatic form of heating but proved somewhat expensive as a fuel. Oil heating is being investigated. Durability of 2 and 4 mil polyethylene and 5 and 10 mil polyflex plastics is limited to one growing season. Two new plastics are being tried. Cost of construction depends largely upon the ability of the prospective grower to improvise but is considered somewhat cheaper than a glass house.

Dates of field seeding broccoli not important

The date of field seeding broccoli at Fredericton did not appear to materially affect the date of harvesting if planting was done before June 15. Seed planted on May 24, June 1, and June 8 matured its crops at approximately the same time. June 15 and June 24 seeding caused the crop to mature later in the summer. Weather conditions seemed more favourable for the June 1 and 8 seeding.

Direct seeding of cole crops for processing is feasible

Three vegetables, cauliflower, brussels sprouts and broccoli, were compared

in tests conducted at Charlottetown. One lot was sown direct to the field with a seeder having a spacer attachment, while the other lot was sown in a nursery row and transplanted. The seed used in each case was 12 ounces per acre. Good stands were obtained with both methods.

Over a 3-year period the results have consistently favoured direct seeding both from the standpoint of early production and total yield.

Close spacing of spinach is profitable

Two spinach varieties, *Viking* and *America*, sown thinly were used in an experiment conducted at Charlottetown. The row spacings were 7 and 14 inches. The 7-inch spacing has consistently outyielded the 14-inch spacing and there has been no loss of processing quality.

Plastic mulch of value for some crops

It has been found at Kentville that in comparison with no mulch, black plastic or polyethylene mulch used on cucurbits (cucumbers, squash, muskmelon, watermelon) resulted in earlier and more productive (numbers and weight) yields.

The plastic (1½ mil. thick) in 4 ft. wide sheets was laid down on a hollowed out area to prevent water runoff. Slits were cut in the material to allow water penetration and for the setting of the plants.

The yields obtained show the number of cucumbers to be increased by 45 per cent with plastic mulches. Muskmelon yields were also up 79 per cent with a fruit which was 37 per cent heavier on the mulched compared to the unmulched row. The increase in yield for watermelons was only 2 per cent, but the mulched plants did produce a fruit which was 41 per cent heavier. The response of squash to the plastic was not different from the unmulched check treatment.

At Fredericton cucumber plants mulched with 4 mil polyethylene black plastic gave a threefold yield increase. Ripe tomato and pepper yields were increased by 50 per cent but there seemed to be no advantage in mulching head lettuce and broccoli. Mulching greatly increased the growth of the cucumber plants and early yields were stimulated. Tomatoes were more uniform in size with fewer culls. Under the conditions at Kentville mulching with black plastic significantly increased the production of early ripe tomatoes.

Cultural methods increase tomato yields

Age of pricking off seedlings, spacing of seedlings in the flat, and pinching the terminal bud all have an effect on the subsequent yield of tomato plants. Studies completed at Kentville, N.S., indicate that seedlings may be pricked off successfully any time from 3 to 15 days after emergence. When pricked off at an age greater than 15 days, the yield of tomatoes is materially reduced. The pricked off seedlings require ample space in the flat. If a large volume of early ripe fruit is desired each plant requires a minimum of 8 square inches in the flat. This area may be reduced to 6 square inches if only total ripe crop is considered. Areas of less than 6 square inches per plant in the flat materially reduce subsequent tomato yields.

Increases of 19 per cent in total ripe yields may be produced by pinching the terminal bud of plants 30 days from germination. Pinching back, however, does

not affect earliness.

Irrigation of sweet corn may be wasteful

Two years' results from an irrigation-nutrition experiment on Cornwallis Sand at Kentville, N.S. have indicated that irrigation at certain stages of growth may have a negligible effect on yield of marketable ears of sweet corn, even though moisture deficiency exists in the soil.

Four sprinkler irrigation treatments were used: (1) "none" (2) "minimum", where water was applied during the critical stage of tasselling to maturity (3) "optimum", where 1 inch of water was applied whenever the soil content dropped to approximately 50 per cent of field capacity and (4) "excess", where 2 inches were applied at the same time treatment 3 was given. Irrigation was actually applied on the average 2.5 times in treatment 2, and 6 times in treatments 3 and 4. In the 2 years, moisture deficiency was indicated from rainfall records, moisture block readings, and crop appearance, in the periods both preceding and following tasselling.

The pattern of response in the two seasons was practically identical. The "check" treatment yielded an average of 1285 dozen marketable ears per acre and "optimum" irrigation produced 1668 dozen per acre. The "minimum" treatment gave 1632 dozen ears per acre, and "excess" irrigation reduced yields slightly to 1600 dozen per acre.

Simazine 50W – a new chemical for controlling weeds in sweet corn

Tests carried out at Kentville during the past season indicate that Simazine 50W will give almost perfect control of annual weeds in sweet corn. Simazine 50W is a wettable powder and was applied as a spray in 40 gallons of water per acre before the corn plants emerged. The corn tolerated 4 pounds per acre without any reduction in yield and 2 pounds per acre gave adequate control of wild radish, lamb's quarters, red root pigweed, wild buckwheat, ragweed, and corn spurrey.

Fertilizers for vegetable growing on peat soils

In 2 years of tests conducted on virgin peat soils in Newfoundland, high nitrogen fertilizers plus minor elements have proved best for turnip production.

Turnip yields responded to rates of nitrogen up to 300 pounds per acre (900 pounds of 33 per cent ammonium nitrate) and to rates of phosphorus up to 150 pounds per acre (750 pounds of 20 per cent super-phosphate). Good growth was obtained without potassium, but greatly increased yields were obtained when it was used with the higher rates of nitrogen and phosphorus.

Based on these results, 9-9-7 fertilizer at 1500 pounds per acre, followed by a side-dressing of ammonium nitrate at 450 pounds per acre, was used on general vegetable areas. Yield responses to side-dressings were obtained, especially with leafy vegetables.

Soil fumigants for weed control in annual flowers

During the past season tests at Kentville have shown that soil fumigants, a fairly recent addition to the family of agricultural chemicals, may be useful for controlling weeds in annual flowers. Because it has wide species tolerance the most promising material tested to date has been sodium methyl dithiocarbamate,

(Vapam or VPM). The material is a liquid and must be applied at 60 gallons per acre in sufficient water to thoroughly drench the soil. Application is made immediately after preparation of the soil and for best results the surface should be rolled immediately. Two to 3 weeks must elapse before planting to allow the chemical to evaporate from the soil. Soil fumigants will control some soil borne insects and fungi but are too expensive to use as weed killers with general field crops.

POTATOES

Chemical weed control in potatoes

DNBP alone, or in combination with Dalapon, gave good to excellent weed control in potatoes at St. John's West. DNBP was applied at rates of 3 and 5 pounds per acre, and at the same rates plus 8 pounds of Dalapon. All treatments were applied as pre-emergence sprays and most weed growth was suppressed for the balance of the growing season. The only weeds not controlled by both rates of DNBP were a few hemp nettles, vetch, and couch grass. The addition of Dalapon gave good couch grass control and increased the control of hemp nettle and vetch. The chemically treated plots gave significantly higher yields than the checks but plots which received Dalapon produced a number of off-type and second growth tubers.

Potato nutrition affects chip quality

Work has been done at Kentville on the effect of the major fertilizer constituents on chip quality from tubers of two varieties of potatoes grown on 11 farms in two successive seasons. One plot of each replicate received an application of 5-10-13 at 3000 pounds per acre; others received the same formulation less nitrogen, phosphorus and potassium respectively.

Mean values indicated a reduction in dry matter, a lower content of reducing sugar and better chip color in the plots receiving potash. There was also lower dry matter, a higher reducing sugar content and a darkening of chip color in those receiving nitrogen. The differences were not consistent on all farms. There were striking differences in chip color and reducing sugar content in tubers from different farms.

Cropping sequence has little effect on potato yield

At the Salmonhurst Illustration Station in New Brunswick, on a Holmesville loam, a study has been under way for 7 years comparing the following cropping systems: (1) potatoes grown continuously (2) potatoes alternated with oats (3) potatoes alternated with millet (in treatment 2 and 3 the oat straw and millet are plowed down with added nitrogen) (4) 3-year rotation of potatoes—oats—clover with manure (5) same as treatment 4 without manure (6) a four year rotation of potatoes—potatoes—oats—clover in which the clover crop is plowed down. All receive a standard fertility treatment for the potato crop of 1 ton per acre of the currently recommended formula.

To date there has been only a very slight trend in favour of the continuous

and 2-year rotations as compared with the longer ones as measured in terms of potato yields. Oats, on the other hand, have produced better in the 3 and 4-year rotations than when grown alternately with potatoes.

Peat effective in increasing potato yields

Peat has proven to be about half as effective as farm manure in a comparative study at the Siegas Illustration Station in Northern New Brunswick. The average yields for four cycles of the rotation, in bushels per acre were as follows: check, 342; 20 tons peat per acre 358; 40 tons peat 397; 20 tons manure 392. In addition to the above treatments all plots received a uniform application of 1 ton per acre of the recommended potato fertilizer formula.

Harvest date and fertilization affect chipping quality

Maturity of potatoes grown at Kentville was affected both by date of harvest and by rate of nitrogen application. Maturity was enhanced by a long growing season and low rates of nitrogen fertilization. Chip color was generally better when mature potatoes were used, but there was a darkening effect from high rates of nitrogen which was independent of the effect of nitrogen on maturity. SEBAGO was affected to a greater extent than KENNEBEC. Yields were highest with late harvestings, and 160 pounds of nitrogen per acre gave higher yields than either greater or lower rates.

Too much potash can be injurious for potatoes

Although the importance of potash for proper growth and development of the potato crop is well recognized, the optimum rate of application in fertilizers is of often a controversial point.

Experiments conducted in the Annapolis Valley extending over a 4-year period and including three varieties of potatoes, permitted a comparison of the effects of potash (240 pounds per acre of K_2O) versus no potash at 37 locations. These were selected to provide a range in soil conditions and management practices.

Omission of potash from the fertilizer resulted in an average of only 9 per cent reduction of yield. Few fields showed an appreciable response to muriate of potash. Response was smallest in 1956, a short growing season, and there was no detectable differences in the response pattern of different varieties.

The mean dry matter contents of tubers from plots receiving no potash were considerably higher (an average of 2 per cent actual dry matter) than those receiving complete fertilizer. There was only one exception to this effect in the 37 trials.

These results indicate that potash is often used by potato growers in this area at rates which are wasteful from the standpoint of yields and which are detrimental to quality. Rate studies are presently in progress to establish optimum requirements for various soils.

Specific gravities of individual potato tubers vary

Investigations at Fredericton emphasize that care should be exercised in selecting a sample of potatoes for use in evaluating boiling and baking quality. The specific gravities of individual tubers in a sample of the variety CANSO were found to vary from 1.065 to 1.100. Persons with experience tasting potatoes were

able to distinguish between the dryness of boiled or baked potatoes of this variety which differed 0.005 in specific gravity (approximately 1 per cent dry matter) 73 per cent of the time. The tasters could likewise determine differences of 0.010, 95 per cent correctly and 0.015, 98 per cent correctly. These results show the need for an adequate sampling method when specific gravity determinations are being made.

Fundy – a new early potato variety

FUNDY is a new early variety of potato, bred at the Fredericton Experimental Farm as part of the National Potato Breeding Project, and named and introduced in the fall of 1958. It originated from a cross between the Fredericton variety KESWICK and the United States Department of Agriculture seedling 96-56. KESWICK contains the wild potato *Solanum demissum* and the varieties EARLAINE and GREEN MOUNTAIN in its pedigree. FUNDY carries the same type of resistance to late blight as KESWICK.

The plants are of medium height with a slightly spreading habit and are of medium vigour. The foliage is subject to rim roll as the plants mature. The maturity is early to mid-season. The flowers are white and rather sparse. The tuber is smooth, slightly netted, shallow-eyed, elliptical, medium thick, of excellent type and very attractive in appearance.

The yield is equal to that of KATAHDIN. In seven replicated yield trials over a three year period, FUNDY has averaged 467.2 bushels per acre of marketable tubers testing 18.8 per cent dry matter compared to 444.7 bushels per acre testing 18.6 per cent dry matter for KATAHDIN.

The cooking quality is excellent. In trials over a five year period, average cooking scores for boiling and baking respectively were 85 and 89 for FUNDY compared with 81 and 82 for GREEN MOUNTAIN and 77 and 81 for KATAHDIN.

The outstanding characteristics of this variety are its earliness, smoothness, attractiveness of tubers, and excellent cooking quality.

Avon – a new potato variety

AVON is a new variety of potato, bred at the Fredericton Experimental Farm as part of the National Potato Breeding Project, and named and introduced in the Spring of 1958. It contains the varieties IRISH COBBLER, KATAHDIN, and MAJESTIC in its pedigree as well as the wild potato *Solanum demissum*. It has moderate resistance to common scab, and is also resistant to several races of late blight.

The top is of medium vigour, compact and bushy. The tubers are of medium size, uniform type but the eyes, particularly of the larger tubers, are rather deep. Hollow heart is sometimes found in the over-sized tubers. Close spacing and moderate fertilization are recommended for best results.

The yield is superior to that of KATAHDIN. In nine yield trials over a 5-year period, AVON has averaged 456.1 bushels per acre of marketable tubers testing 19.5 per cent dry matter compared with 406.8 bushels per acre testing 19.1 per cent dry matter for KATAHDIN.

The cooking quality is excellent. In trials over a period of 6 years, cooking scores for boiling and baking respectively averaged 88 and 86 for AVON compared with 82 and 78 for GREEN MOUNTAIN and 78 and 76 for KATAHDIN.

AVON makes a satisfactory chip when reconditioned following a period in storage, but it was primarily because of its ability to make a chip of outstanding color, when processed directly from the field, that this variety was introduced to satisfy a demand in Nova Scotia.

SUBJECT INDEX

Subject	Pages
Apples	20,21
Bees	8
Beef cattle	8,9,10
Broilers	10,11,12
Cereals	14
Chemical herbicides	15,16,18,23
Cranberries	18
Cultural methods	22
Dairy cattle	8
Dikeland	15
Diseases	14
Drainage	16,19
Eggs	11
Fats in rations	9
Farm management	19
Fertilizers and manure	14,15,16,17,18,19,23,25
Fish products	10,12,13
Forage crops	19,20
Irrigation	23
Liming	17
Pastures	8,15,16,17
Pellets	12
Plastics	21,22
Potatoes	24,25,26,27
Poultry nutrition	10,11,12,13
Seed production	20,21
Silage	15
Sheep	10
Soil erosion	18,19
Soil fumigants	23
Storage	21
Swine	10
Vegetables	21,22,23
Vitamins	13

